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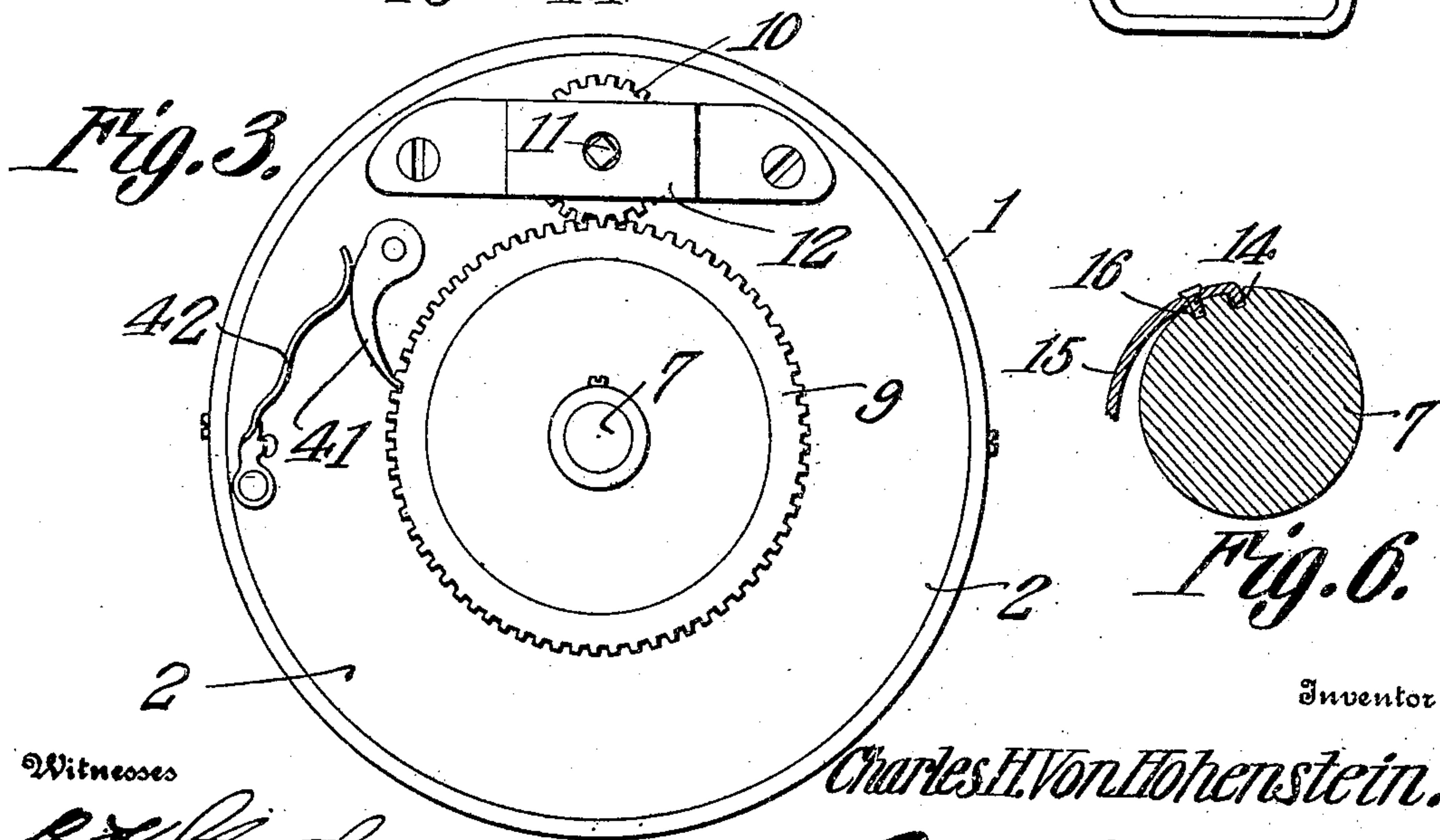
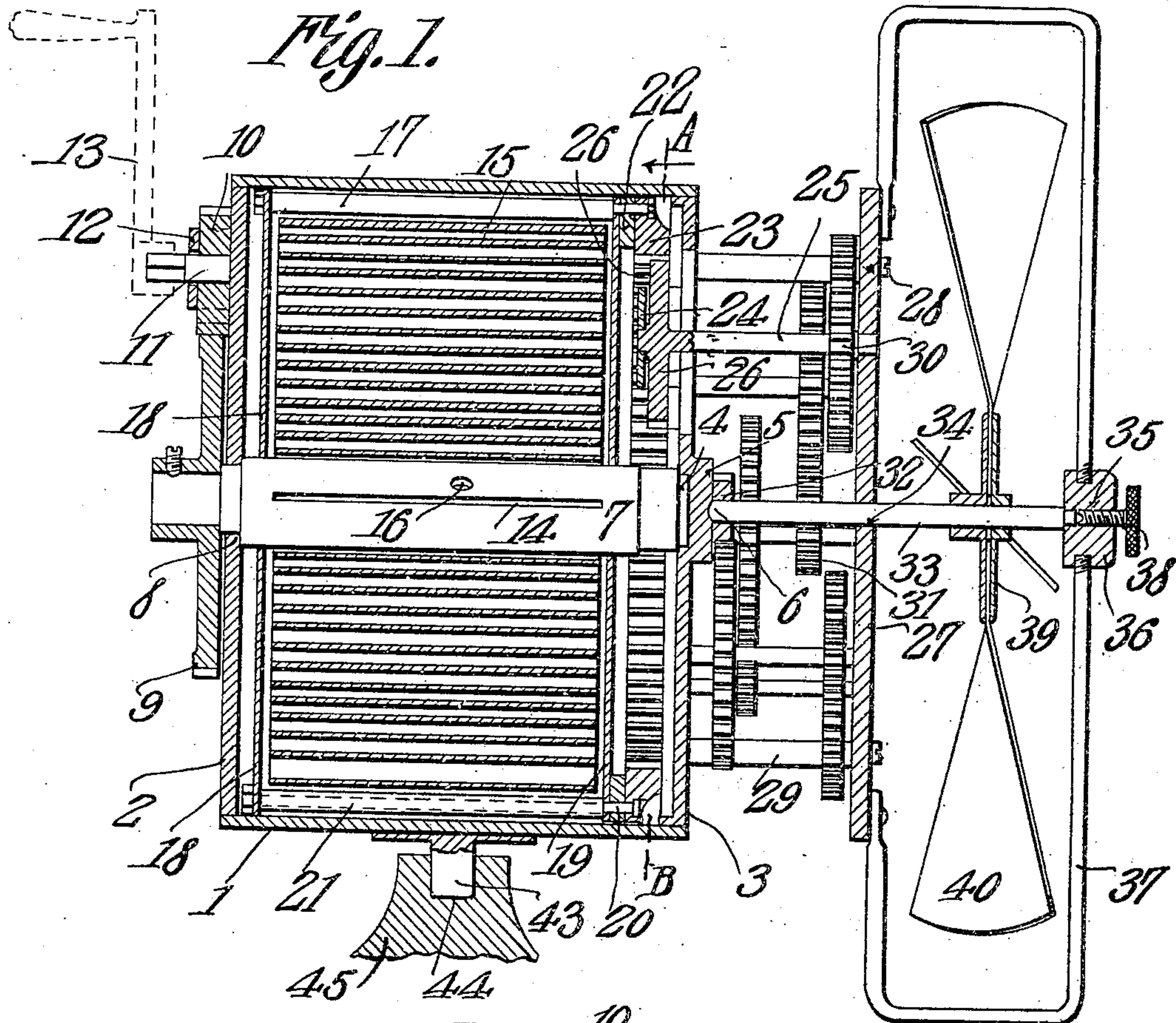
C. H. VON HOHENSTEIN.
SPRING MOTOR.

954,602.

APPLICATION FILED APR. 14, 1909.

Patented Apr. 12, 1910.

3 SHEETS—SHEET 1.



Witnesses
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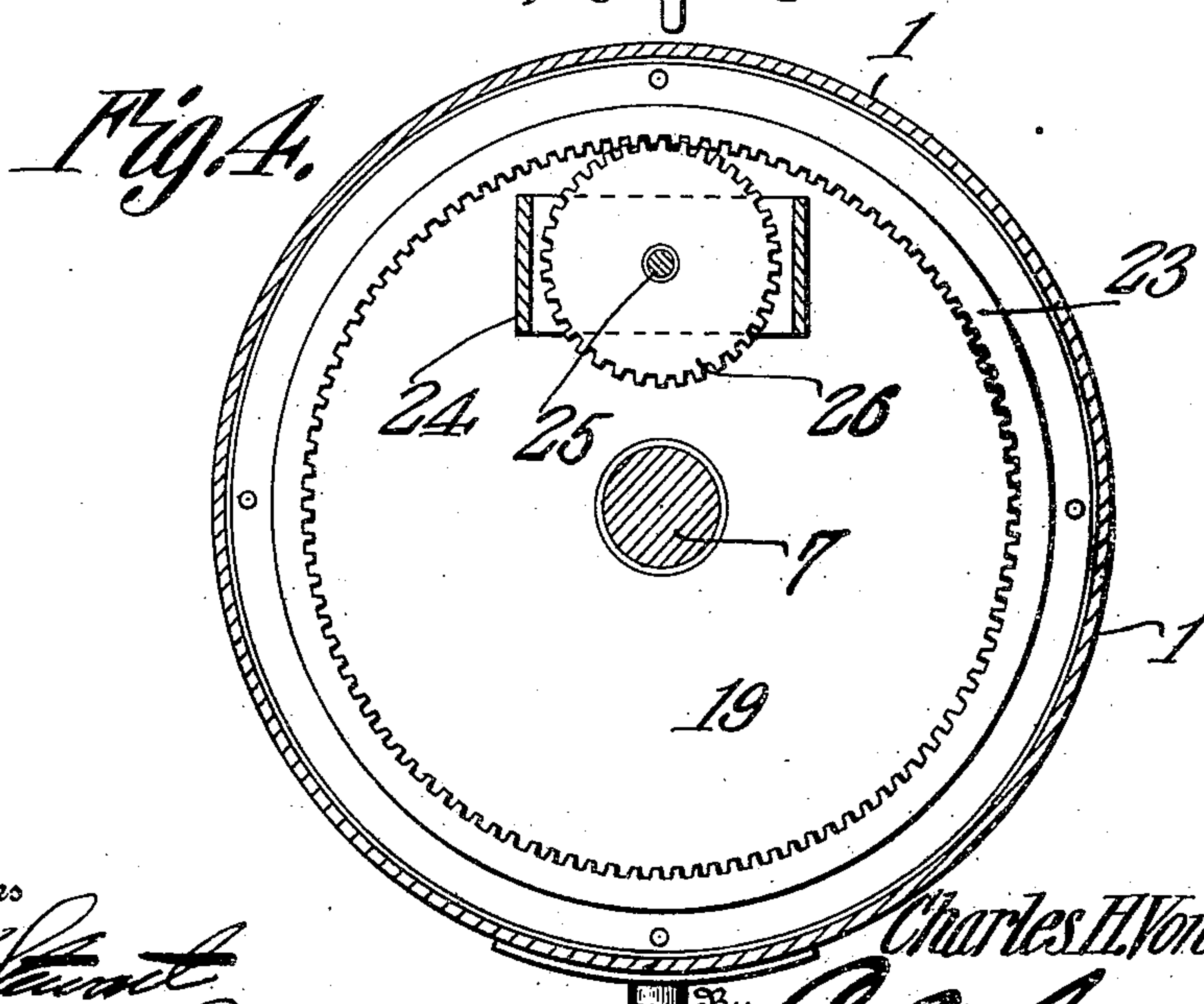
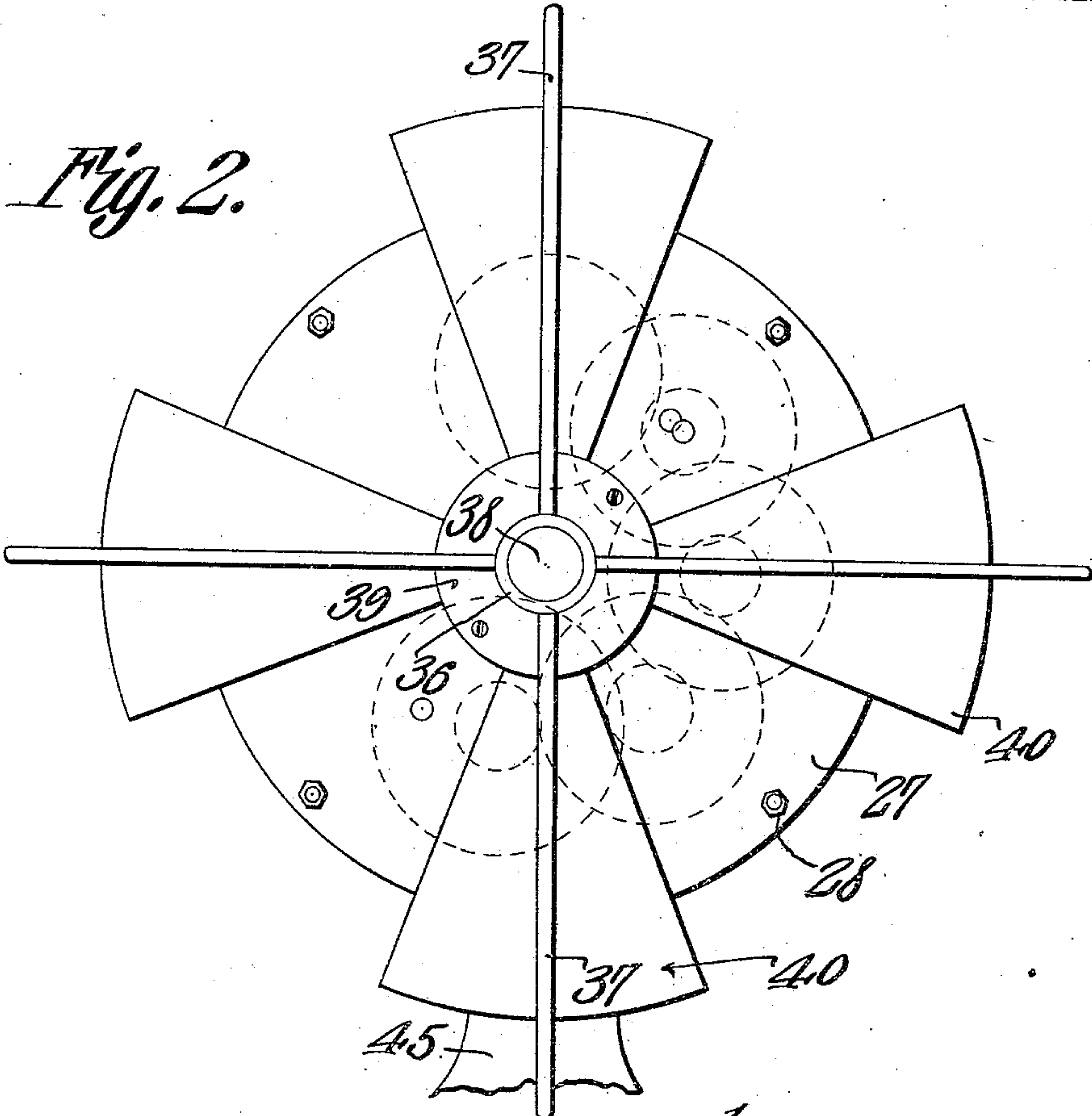
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3 SHEETS—SHEET 2.



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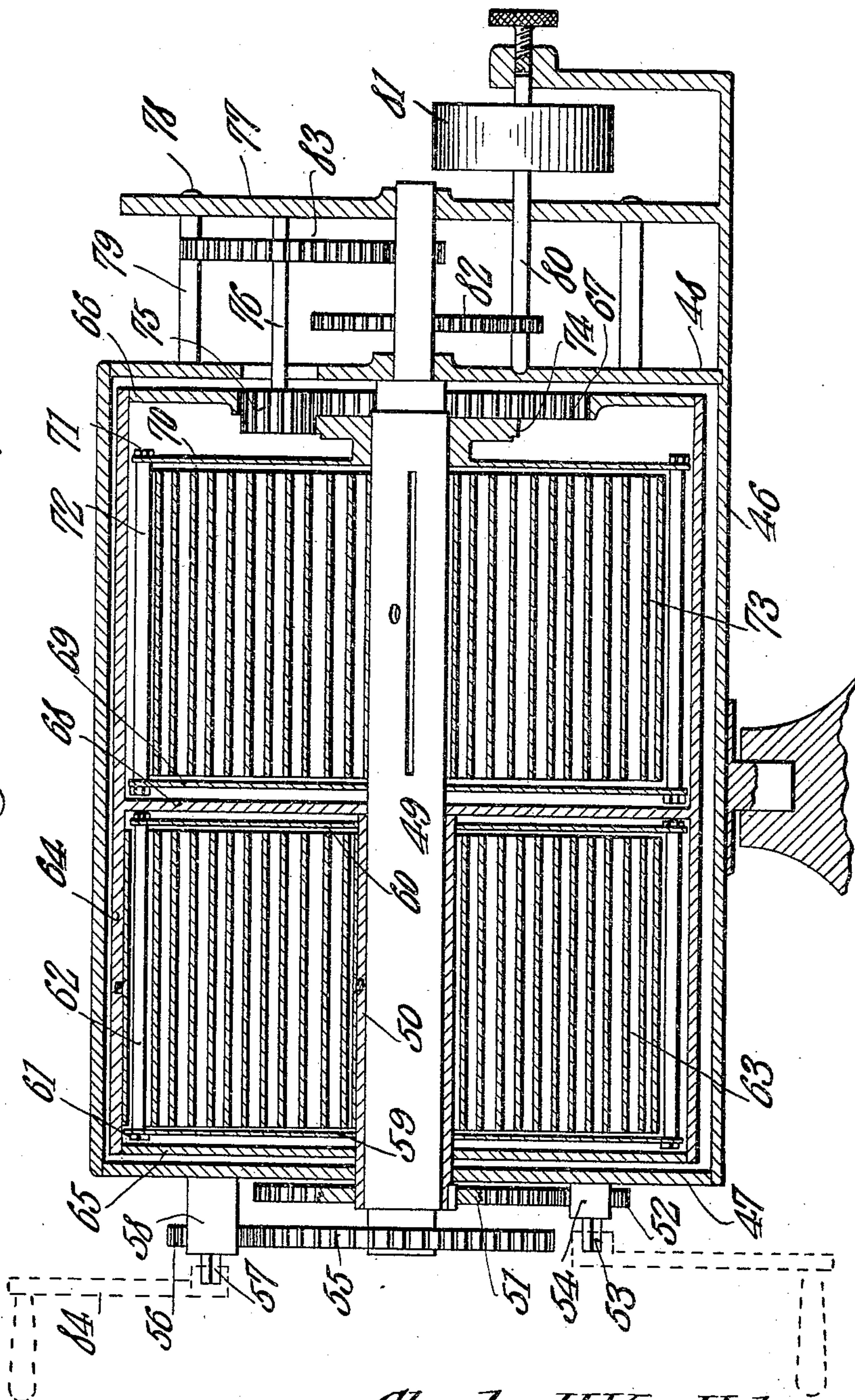
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3 SHEETS—SHEET 3.

Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES H. VON HOHENSTEIN, OF SAN ANTONIO, TEXAS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE INTERNATIONAL SPRING MOTOR COMPANY, A CORPORATION OF NEVADA.

SPRING-MOTOR.

954,602.

Specification of Letters Patent. Patented Apr. 12, 1910.

Application filed April 14, 1909. Serial No. 489,827.

To all whom it may concern:

Be it known that I, CHARLES H. VON HOHENSTEIN, a citizen of the United States, residing at San Antonio, in the county of Bexar and State of Texas, have invented a new and useful Spring-Motor, of which the following is a specification.

This invention relates to spring motors and is more particularly designed as an improvement upon the structure described and claimed in Patent No. 619,058, issued to me on February 7th, 1899.

The object of the invention is to improve upon the general construction of the device, render it more efficient in operation, compact and durable, means being utilized whereby the spring can be quickly wound.

Another object is to provide a driven shaft having bearings of novel form, one of said bearings including a brake device by means of which the operation of the motor can be controlled at will.

With these and other objects in view the invention consists in certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims.

In the accompanying drawings the preferred forms of the invention have been shown.

In said drawings:—Figure 1 is a central vertical section through a motor embodying the present improvements, the construction being such as to operate a fan. Fig. 2 is a front elevation thereof. Fig. 3 is a rear elevation of the motor. Fig. 4 is a section on line A—B Fig. 1. Fig. 5 is a vertical longitudinal section through a modified form of motor. Fig. 6 is a transverse section through the arbor shown in Fig. 1 and illustrates the connection between the spring and the arbor.

Referring to the figures by characters of reference 1 designates a cylindrical casing having a removable head 2 fitted in one end thereof and another removable head 3 fitted in the other end. The head 3 has a central recess 4 in the center of its inner face and an extension 5 upon the center of its outer face, said extension being provided with a recess 6. The recess 4 constitutes a bearing for one end of the spring arbor 7 and the other end of this arbor extends through an opening 8 formed in the center of the head 2, there being a gear 9 secured in any suit-

able manner upon the projecting portion of the arbor. This gear is constantly in mesh with a driving gear 10 keyed or otherwise secured to a short shaft 11 which is journaled in a bracket 12 fastened to the head 2. The outer end of this shaft 11 is angular and is designed to be engaged by the socketed end of a winding crank or key 13, such as has been indicated by dotted lines in Fig. 1.

The arbor 7 is preferably formed with a longitudinal groove 14 designed to receive one end of the spring 15 of the motor, said end being held in place in any preferred manner as by means of a screw, (see Fig. 6) and which is designed to be extended through the spring and into the opening 16 in arbor 7. The outer end of the spring is secured to a rod 17 connecting the marginal portions of two disks 18 and 19 which are loosely mounted on the arbor 7 and are connected at desired intervals by additional rods 20 on which are arranged spacing sleeves 21.

The disks 18 and 19 are spaced from the casing 1 and are designed to rotate therein and upon the arbor, the disk 19 being provided upon its outer face with a spacing ring 22 to which is attached an internal gear 23. A bracket 24 is secured upon the inner face of the head 3 and projects into the gear 23, said bracket constituting a bearing for one end of a shaft 25 and on which is arranged a gear 26 meshing with the gear 23. The outer end of the shaft 25 is journaled within a bearing plate 27 connected to the head 3 by means of rods 28 on which spacing sleeves 29 are mounted. A gear 30 is secured to shaft 25 and close to the bearing plate 27 and motion is transmitted from this gear through a train of gears 31 to a gear 32 keyed or otherwise secured to the driven shaft 33 of the mechanism. This shaft extends through an opening 34 formed within the bearing plate 27 and one end of the shaft is rounded and bears within the recess 6, while the other end of said shaft is reduced in diameter and bears within a bore 35 formed within a bearing block 36, said block being connected to the plate 27 by a series of radially disposed U-shaped rods 37. The outer end of the shaft 33 is tapered as shown in Fig. 1 and is designed to bear against one end of a set screw 38 which extends into the bore 35 and longitudinally thereof, this screw constituting a thrust bearing for the shaft and being de-

signed, when screwed inwardly, to bear against the shaft with sufficient pressure to act as a brake and thus retard the rotation of the shaft to any degree desired.

5 If desired a hub 39 may be secured to the shaft 33 and said hub may be provided with fan-blades 40 arranged to travel within the U-shaped members 37.

It is of course necessary to prevent the
10 gear 9 and arbor 7 from rotating in one direction while the spring is being wound, and, with this object in view, a pawl 41 is pivotally mounted upon the head 2 and engages the gear 9, said pawl being held nor-
15 mally in such position by means of a spring 42.

Where the motor is used for driving a fan it is desirable that the same be so mounted as to swing about a vertical axis.
20 The casing 1 is therefore formed with a stud 43 projecting downwardly therefrom and into a socket 44 formed within a supporting base 45.

In using the mechanism herein described
25 a key is placed in engagement with the angular end of shaft 11 and the said shaft rotated so as to cause the gear 10 to revolve the gear 9. Rapid rotation of the disks 18 and 19 is prevented by reason of the gear
30 connections between the gear 23 and the shaft 33, and it will be apparent therefore that as the arbor 7 is rotated in the manner described the spring 15 will be wound thereon, the pawl 41 serving to prevent the arbor
35 from revolving in the opposite direction. The spring will cause the disks 18 and 19 to revolve upon the arbor 7, the gear 23 turning therewith and serving to rotate the gear 26. Motion is transmitted from this
40 gear and its shaft 25 through the train of gears to shaft 33. By screwing the set screw 38 against the end of shaft 33 the speed of rotation of said shaft can be retarded to any desired extent.

45 It will be seen that the various parts of the motor are readily accessible for the purpose of making repairs or for cleaning them.

If desired, and as shown in Fig. 5, two
50 springs may be employed for actuating the driven shaft, said springs being designed to be wound separately but working in unison, so as to greatly increase the power of the motor. In this structure the cylindrical cas-
55 ing 46 is provided with removable heads 47 and 48, there being central openings within the heads and within which bear opposite portions of an arbor 49, there being a sleeve
60 50 upon one end portion of the arbor and extending through the opening in the head 47. This sleeve has a gear 51 keyed or otherwise secured to it and meshing with a gear 52 mounted to rotate with a shaft
65 53 which is journaled in a bracket 54 secured to the head 47. One end of the arbor

projects beyond the sleeve 50 and has a gear
55 keyed or otherwise secured to it and meshing with an actuating gear 56 which is secured to a shaft 57 journaled within a
60 bracket 58 carried by the head 47. The sleeve 50 has disks 59 and 60 loosely mounted thereon and connected by rods 61 on
70 which spacing sleeves 62 are mounted. A spring 63 is secured at one end to the sleeve, while its other end is attached to an inner
75 casing 64, which is cylindrical and which is concentric with the outer casing 46, there being heads 65 and 66 removably mounted within the ends of said inner casing and
80 close to the heads 47 and 48 respectively. The head 65 is designed to rotate upon the sleeve 50 while the head 66 has an integral internal gear 67. A partition 68 is centrally arranged within the inner casing 64
85 and mounted on the arbor 49 between this partition and the head 66 are disks 69 and 70 which are mounted to rotate on the arbor and are connected by rods 71 on which spacing
90 sleeves 72 are mounted. A spring 73 is secured at one end to the arbor while its other end is attached to one of the rods 71 and a gear 74 is revolubly mounted upon
95 the arbor and connected to and revoluble with the disk 70. A gear 75 is interposed between and meshes with the gear 74 and the interior gear 67, said gear 75 being
100 secured upon a shaft 76 which extends through the head 48 and is journaled at one end within a bearing plate 77. Said plate is connected to the head 48 by means
105 of rods 78 having spacing sleeves 79 thereon. A driven shaft 80 is journaled within the head 48 and plate 77 and may be provided with a drive pulley 81, this shaft 80 being actuated by a train of gears 82 driven
110 by the gear 83 on shaft 76.

It is of course to be understood that a simple arrangement of pawls such as indicated in Fig. 3 is to be provided for each
115 of the gears 51 and 55 so as to prevent rotation of each of said gears in one direction.

In using the form of motor disclosed in Fig. 5 a key, such as indicated at 84, is placed upon the shaft 57 and when rotated
120 will cause the gear 56 to rotate the gear 55 and arbor 49. The spring 73 will thus be wound and, in unwinding, will tend to rotate the disks 69 and 70, together with the gear 74, in one direction. The key 84 is
125 then placed in engagement with shaft 53 and gear 52 caused to rotate the gear 51 and the sleeve 50. The spring 63 will thus be wound upon the sleeve and will tend to rotate the inner casing 64 and the internal
130 gear 67. The springs 63 and 73 are oppositely coiled, so that while they are simultaneously unwinding, the gear 74 and the gear 67 are rotating in opposite directions, thus coöperating to rotate gear 75 and the mechanism driven thereby. A very powerful

motor is thus produced, and, should one of the springs run down before the other, it can be wound without the necessity of stopping the motor, because the other spring will in the meantime operate to actuate the mechanism.

Obviously various changes may be made in the construction and arrangement of the parts without departing from the spirit or sacrificing the advantages of the invention.

What is claimed is:—

1. A spring motor comprising a casing, an arbor mounted for rotation therein, disks loosely mounted on the arbor and fixedly connected to each other, a spring secured at its ends to the arbor and disks, respectively, an internal gear revolubly mounted within the casing and connected to the disks, a smaller gear surrounded by and meshing with the internal gear, both of said gears being disposed within the casing, a driven shaft revoluble with the smaller gear, a fan shaft, a train of gears for transmitting motion from said smaller gear to the shaft, and a screw threaded friction device for bearing against the fan shaft to control the rotation thereof.

2. A spring motor comprising a casing, an arbor mounted for rotation therein, a sleeve revolubly mounted upon the arbor, separate winding means for rotating the sleeve and arbor, spiral springs secured to the sleeve and to the arbor respectively, an internal gear actuated by the spring upon the sleeve, a gear actuated by the other spring and concentric with the internal gear, a gear interposed between and meshing with said internal gear and the gear concentric

therewith, and a shaft actuated by said interposed gear.

3. A spring motor comprising an arbor, a sleeve revolubly mounted thereon, a spring secured to the sleeve, a spring secured to the arbor, separate winding means for actuating the arbor and sleeve to wind the respective springs, an internal gear connected to and actuated by one of the springs, a gear actuated by the other spring and arranged concentric with the internal gear, and a gear interposed between and actuated by said internal gear and the concentrically arranged gear.

4. A device of the class described comprising an arbor, a sleeve mounted to rotate thereon, a casing loosely mounted upon the arbor, an internal gear revoluble with the casing and disposed at one end thereof, a spring within the casing and secured at its ends to the sleeve and casing respectively, spaced disks revolubly mounted upon the arbor, a coiled spring interposed therebetween and secured at its ends to the arbor and disks, a gear revoluble with the disks and arranged concentric with the internal gear, a gear interposed between said concentric gears and meshing therewith, and separate means for rotating the sleeve and arbor to separately wind the springs.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

CHARLES H. VON HOHENSTEIN.

Witnesses:

W. L. CORDO,
E. J. WILLIAMS.